



THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME:

Dairyland Seed Co., Inc.

Whereas, THERE HAS BEEN PRESENTED TO THE

Secretary of Agriculture

AN APPLICATION REQUESTING A CERTIFICATE OF PROTECTION FOR AN ALLEGED NOVEL VARIETY OF SEXUALLY REPRODUCED PLANT, THE NAME AND DESCRIPTION OF WHICH ARE CONTAINED IN THE APPLICATION AND EXHIBITS, A COPY OF WHICH IS HEREUNTO ANNEXED AND MADE A PART HEREOF, AND THE VARIOUS REQUIREMENTS OF LAW IN SUCH CASES MADE AND PROVIDED HAVE BEEN COMPLIED WITH, AND THE TITLE THERETO IS, FROM THE RECORDS OF THE PLANT VARIETY PROTECTION OFFICE, IN THE APPLICANT(S) INDICATED IN THE SAID COPY, AND WHEREAS, UPON DUE EXAMINATION MADE, THE SAID APPLICANT(S) IS (ARE) ADJUDGED TO BE ENTITLED TO A CERTIFICATE OF PLANT VARIETY PROTECTION UNDER THE LAW.

NOW, THEREFORE, THIS CERTIFICATE OF PLANT VARIETY PROTECTION IS TO GRANT UNTO THE SAID APPLICANT(S) AND THE SUCCESSORS, HEIRS OR ASSIGNS OF THE SAID APPLICANT(S) FOR THE TERM OF *eighteen* YEARS FROM THE DATE OF THIS GRANT, SUBJECT TO THE PAYMENT OF THE REQUIRED FEES AND PERIODIC REPLENISHMENT OF VIABLE BASIC SEED OF THE VARIETY IN A PUBLIC REPOSITORY AS PROVIDED BY LAW, THE RIGHT TO EXCLUDE OTHERS FROM SELLING THE VARIETY, OR OFFERING IT FOR SALE, OR REPRODUCING IT, OR IMPORTING IT, OR EXPORTING IT, OR USING IT IN PRODUCING A HYBRID OR DIFFERENT VARIETY THEREFROM, TO THE EXTENT PROVIDED BY THE PLANT VARIETY PROTECTION ACT. THE UNITED STATES SEED OF THIS VARIETY (1) SHALL BE SOLD BY VARIETY NAME ONLY AS CERTIFIED SEED AND (2) SHALL CONFORM TO THE NUMBER OF GENERATIONS SPECIFIED BY THE OWNER OF THE RIGHTS. (84 STAT. 1542, AS AMENDED, 7 U.S.C. 2321 ET SEQ.)

RED CLOVER

'Ruby'

In Testimony Whereof, I have hereunto set my hand and caused the seal of the Plant Variety Protection Office to be affixed at the City of Washington this 15th day of April in the year of our Lord one thousand nine hundred and eighty-two.

Attest:

Kenneth H. E.
Acting
Commissioner
Plant Variety Protection Office
Grain Division
Agricultural Marketing Service

John R. Block
Secretary of Agriculture



UNITED STATES DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE
LIVESTOCK, POULTRY, GRAIN & SEED DIVISION

FORM APPROVED
OMB NO. 40-R3822

APPLICATION FOR PLANT VARIETY PROTECTION CERTIFICATE

INSTRUCTIONS: See Reverse.

No certificate for plant variety protection may be issued unless a completed application form has been received (5 U.S.C. 553).

1a. TEMPORARY DESIGNATION OF VARIETY JOY		1b. VARIETY NAME RUBY		FOR OFFICIAL USE ONLY PV NUMBER 8000124	
2. KIND NAME RED CLOVER		3. GENUS AND SPECIES NAME TRIFOLIUM PRATENSE		FILING DATE 5/16/80	TIME 3:00 <u>P.M.</u>
4. FAMILY NAME (BOTANICAL) LEGUMINOSAE		5. DATE OF DETERMINATION JANUARY, 1978 1/24/81		FEE RECEIVED \$ 500.00 \$ 250.00	DATE 5/16/80 12/11/81
6. NAME OF APPLICANT(S) DAIRYLAND SEED CO., INC.		7. ADDRESS (Street and No. or R.F.D. No., City, State, and ZIP Code) P.O. BOX 958 WEST BEND, WI 53095		8. TELEPHONE AREA CODE AND NUMBER (414) 338-0163	
9. IF THE NAMED APPLICANT IS NOT A PERSON, FORM OF ORGANIZATION: (Corporation, partnership, association, etc.) CORPORATION			10. IF INCORPORATED, GIVE STATE AND DATE OF INCORPORATION WISCONSIN		11. DATE OF INCORPORATION DEC., 1963

12. NAME AND MAILING ADDRESS OF APPLICANT REPRESENTATIVE(S), IF ANY, TO SERVE IN THIS APPLICATION AND RECEIVE ALL PAPERS:

MR. THOMAS G. STRACHOTA, DAIRYLAND SEED CO., INC. P.O. BOX 958 WEST BEND, WI 53095

13. CHECK BOX BELOW FOR EACH ATTACHMENT SUBMITTED:

- ☒ 13A. Exhibit A, Origin and Breeding History of the Variety (See Section 52 of the Plant Variety Protection Act.)
5-16/80
- ☒ 13B. Exhibit B, Novelty Statement.
5-16/80
- ☒ 13C. Exhibit C, Objective Description of the Variety (Request form from Plant Variety Protection Office.)
- ☒ 13D. Exhibit D, Additional Description of the Variety.

14a. DOES THE APPLICANT(S) SPECIFY THAT SEED OF THIS VARIETY BE SOLD BY VARIETY NAME ONLY AS A CLASS OF CERTIFIED SEED? (See Section 83(a). (If "Yes," answer 14B and 14C below.) ☒ YES ☒ NO

14b. DOES THE APPLICANT(S) SPECIFY THAT THIS VARIETY BE LIMITED AS TO NUMBER OF GENERATIONS? ☒ YES ☐ NO

14c. IF "YES," TO 14B, HOW MANY GENERATIONS OF PRODUCTION BEYOND BREEDER SEED? ☒ FOUNDATION ☒ REGISTERED ☒ CERTIFIED

15a. DID THE APPLICANT(S) FILE FOR PROTECTION OF THIS VARIETY IN OTHER COUNTRIES? ☐ YES ☒ NO (If "Yes," give name of countries and dates.)

15b. HAVE RIGHTS BEEN GRANTED THIS VARIETY IN OTHER COUNTRIES? ☐ YES ☒ NO (If "Yes," give name of countries and dates.)

16. DOES THE APPLICANT(S) AGREE TO THE PUBLICATION OF HIS/HER (THEIR) NAME(S) AND ADDRESS IN THE OFFICIAL JOURNAL? ☒ YES ☐ NO

17. The applicant(s) declare(s) that a viable sample of basic seed of this variety will be furnished with the application and will be replenished upon request in accordance with such regulations as may be applicable.

The undersigned applicant(s) is (are) the owner(s) of this sexually reproduced novel plant variety, and believe(s) that the variety is distinct, uniform, and stable as required in Section 41, and is entitled to protection under the provisions of Section 42 of the Plant Variety Act.

Applicant(s) is (are) informed that false representation herein can jeopardize protection and result in penalties.

4-15-80
(DATE)

Thomas G. Strachota
(SIGNATURE OF APPLICANT)

(DATE)

(SIGNATURE OF APPLICANT)

INSTRUCTIONS

Rec'd.
MAY 8 1980
1:20 pm

GENERAL: Send an original copy of the application and exhibits, at least 2,500 viable seeds, and \$500 fee (\$250 filing fee and \$250 examination fee) to U.S. Dept. of Agriculture, Agricultural Marketing Service, Livestock, Poultry, Grain and Seed Division, Plant Variety Protection Office, National Agricultural Library Building, Beltsville, Maryland 20705. (See section 180.175 of the Regulations and Rules of Practice.) Retain one copy for your files. All items on the face of the form are self-explanatory unless noted below.

ITEM

- 5 Give the date the applicant determined that he had a new variety based on (1) the definition in section 41(a) of the Act and (2) the date a decision was made to increase the seed.
- 13a Give: (1) the genealogy, including public and commercial varieties, lines, or clones used, and the breeding method; (2) the details of subsequent stages of selection and multiplication; (3) the type and frequency of variants during reproduction and multiplication and state how these variants may be identified and (4) evidence of uniformity and stability.
- 13b Give a summary statement of the variety's novelty. Clearly state how this novel variety may be distinguished from all other varieties in the same crop. If the new variety most closely resembles one or a group of related varieties: (1) identify these varieties and state all differences objectively; (2) attach statistical data for characters expressed numerically and demonstrate that these differences are significant; and (3) submit, if helpful, seed and plant specimens or photographs of seed and plant comparisons clearly indicating novelty.
- 13c Fill in the Exhibit C, Objective Description form, for all characteristics for which you have adequate data.
- 13d Describe any additional characteristics that are not described, or whose description cannot be accurately conveyed in Exhibit C. Use comparative varieties as is necessary to reveal more accurately the description of characteristics that are difficult to describe, such as, plant habit, plant color, disease resistance, etc.
- 14a If "YES" is specified (seed of this variety be sold by variety name only as a class of certified seed) the applicant may NOT reverse his affirmative decision after the variety has either been sold and so labeled, his decision published, or the certificate has been issued. However, if the applicant specified "NO," he may change his choice. (See section 180.16 of the Regulations and Rules of Practice.)
- 15a See section 42 of the Plant Variety Protection Act and section 180.7 of the Regulations and Rules of Practice.

REVISED EXHIBIT A
ORIGIN AND BREEDING HISTORY OF RUBY RED CLOVER

Ruby was developed under the experimental name Joy by the Teweles Seed Company at its Clinton, Wisconsin Research Station and at its Sloughhouse, California Research Station. In November 1977 Dairyland Seed Co., Inc. purchased the Teweles Research facilities and acquired rights to this red clover variety. Dairyland then changed the name to Ruby and released the variety. Parental sources were selected from Arlington and Kenstar based on progeny tests for forage yield, seed yield, forage productivity, persistence, winter hardiness, and disease resistance. Forage and disease research was conducted at the Clinton Research Station. Seed set research was conducted at the Sloughhouse Research Station. Ruby has been observed over generations and is a stable variety that does not change in its essential and distinctive characters. Ruby is as uniform as other varieties of red clover. No variants have been observed outside the range normal for a cross-pollinated variety. A sufficient quantity of breeder and foundation seed has been increased for the life of the variety. This seed is being maintained under climate controlled conditions. There are three classes of seed increase: breeder seed, foundation seed, and certified seed.

RUBY RED CLOVER

EXHIBIT B

NOVELTY STATEMENT

Ruby Red Clover is most similar to Kenstar Red Clover. However, Ruby has both northern and southern anthracnose resistance, better powdery mildew resistance, and more winter hardy than Kenstar. Kenstar is resistant to southern anthracnose but susceptible to northern anthracnose whereas Arlington is resistant to northern anthracnose but susceptible to southern anthracnose. This additional disease resistance and winter hardiness makes Ruby have a much wider range of geographic adaptation which would be considered a novel trait of important agricultural value.

OBJECTIVE DESCRIPTION OF VARIETY
RED CLOVER (*Trifolium Pratense*)

NAME OF APPLICANT(S) DAIRYLAND SEED COMPANY, INC.	VARIETY NAME OR TEMPORARY DESIGNATION RUBY
ADDRESS (Street and No., or R.F.D. No., City, State, and ZIP Code) P. O. BOX 958 WEST BEND, WISCONSIN 53095	FOR OFFICIAL USE ONLY PVPO NUMBER 8000124

Place the appropriate number that describes the varietal character of this variety in the boxes below. Fill unused columns with zeros (e.g. 0 9 9 when number is 99). In comparisons to standard varieties, the value 0 0 should only be used to indicate that the varieties are equal. The symbol Δ indicates a decimal point. Characteristics described, including numerical measurements, should represent those which are TYPICAL for the variety. Measured data should be for SPACED PLANTS. Any recognized color fan, e.g. Royal Horticultural Colour Chart, may be used to determine plant colors; designate system used: . Give location of test area .
Ranges of values are valuable and may be included with additional description elsewhere in the application.

NOTE: For single plant data a minimum of 100 plants is suggested.

1. TYPE:

1 1 = DOUBLE CUT (medium) 2 = SINGLE CUT (mammoth) 3 = OTHER (Specify) _____

2. PLOIDY:

1 1 = DIPLOID 2 = TETRAPLOID 3 = OTHER (Specify) _____

3. PRODUCTIVE PERSISTENCE (Usual duration of planting):

2 1 = ANNUAL 2 = BIENNIAL 3 = SHORT LIVED PERENNIAL (3 - 4 Years)

4. ADAPTATION: (e.g., 0 2 3 = northcentral and southcentral)

0 0 2 1 = NORTHEAST 2 = NORTHCENTRAL 3 = SOUTHCENTRAL
4 = SOUTHEAST 5 = WEST 6 = OTHER (Specify) _____

STANDARD VARIETIES

1 = KENSTAR 2 = ARLINGTON 3 = PENNSCOTT 4 = TENSAS 5 = ALTASWEDE

5. MATURITY:

0 7 5 11/24/81
% PLANTS FLOWERING IN SEEDLING YEAR

Beginning of spring growth:

0 2 DAYS EARLIER THAN..... 2 STANDARD VARIETY

DAYS LATER THAN..... STANDARD VARIETY

Time of flowering (50% of plants in bloom): (from spring growth in non-seedling year)

0 3 DAYS EARLIER THAN..... 2 STANDARD VARIETY

DAYS LATER THAN..... STANDARD VARIETY

6. PLANT HEIGHT (from soil level to top of flowering head at 50% flowering)

* 6 7 CM. TALL
 CM. SHORTER THAN STANDARD VARIETY
 1 6 CM. TALLER THAN 1 STANDARD VARIETY

* Shorter than the total length of stem
because of prostration at the base of the stem.

7. FLOWERING STEM (from first noncontracted internode, longer than 0.5 cm., to tip of flowering head):

 NO. FLOWERING STEMS PER CROWN

 NO. INTERNODES

 CM. LENGTH OF STEM

Hairiness: Give percentage of plants with each type of surface (Total = 100%)

 < % HAIRS PROJECTING UPWARD

 > % HAIRS PROJECTING DOWNWARD OR AT RIGHT ANGLES

 < % GLABROUS (FEWER THAN 5 HAIRS/1 CM. PATH ALONG CENTRAL INTERNODES)

Habit: Give percentage of plants with each type of habit. Stem habit should be determined by the angle of lowest stems to the horizontal (soil level) at 50% flowering.

 % PROSTRATE (0 - 30°) % SEMI-PROSTRATE (30 - 45°) % SEMI-ERECT (45 - 60°) % ERECT (60 - 90°)

8. LEAF (Central leaflet at 3rd node below flowering head):

 MM WIDTH MM NARROWER THAN STANDARD VARIETY

 MM WIDER THAN STANDARD VARIETY

 MM LENGTH MM SHORTER THAN STANDARD VARIETY

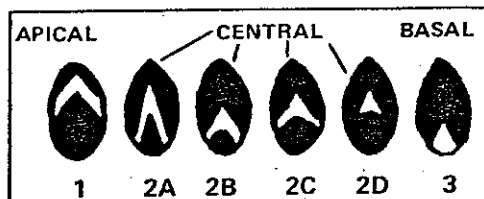
 MM LONGER THAN STANDARD VARIETY

Color:

 1 = LIGHT GREEN (Altaswede) 2 = MEDIUM GREEN () 3 = DARK GREEN (Hungaropoli) 4 = BLUE GREEN ()

Leaf Marking (at 50% flowering): **NOTE:** Categories below allow for increasingly detailed description of the same data. Diagram illustrates terms: 1 = APICAL 2A = FULL 2B = EXTENDED 2C = DELTA 2D = INCOMPLETE 3 = BASAL

Presence of Mark: Of total plants, give percentage marked and unmarked (Total = 100%)

 % ABSENT % MARKED


Position of Mark: Of total plants, give percentage with leaf mark in each position (Total = % marked, above)

 % APICAL % CENTRAL % BASAL

Shape of Mark: Of total plants, give percentage with central leaf marks having each shape (Total = % marked, above)

 % FULL % EXTENDED % DELTA % INCOMPLETE

9. FLOWER COLOR (Determine color on freshly opened florets): Give percentage of plants with each color (Total = 100%).

Colors are referenced to the Munsell Color System.

 % WHITE % LIGHT PINK (5RP 8/4)

 % MEDIUM PINK (5RP 7/6) % DARK PINK (5RP 6/8)

 % RED (5RP 5/10) % OTHER (Specify) _____

10. SEED COLOR: Maximum color development in unstored, mature seed (at beginning of calyx browning). Give percentage of plants with each seed color (Total = 100%)

	4	4
--	---	---

% YELLOW

	1	7
--	---	---

% YELLOW WITH SOME PURPLE

	1	3
--	---	---

% PURPLE

	2	6
--	---	---

% PURPLE WITH SOME YELLOW

--	--	--

% OTHER (Specify) _____ (attach explanation)

11. DISEASE AND INSECT RESISTANCE (0 = not tested, 1 = susceptible, and 2 = resistant). If variety is claimed to be resistant or to show intermediate reaction, substantiating test scores should be attached clearly identifying disease, application variety, check varieties, date and location of test, and range and direction of test scores.

A. DISEASES:

☐
CROWN ROT (*Sclerotinia trifoliorum*)
☐
ROOT ROT (*Fusarium spp.*)
☒
NORTHERN ANTHRACNOSE (*Kabatella caulivora*)
☐
SUMMER BLACK STEM (*Cercospora zebrina*)
☐
SOUTHERN ANTHRACNOSE (*Colletotrichum trifolii*)
☐
BLACK STEM (*Phoma trifolii*)
☐
TARGET SPOT (*Stemphylium sarcinaeformae*)
☒
POWDERY MILDEW (*Erysiphe polygoni*)
☐
PEPPER SPOT (*Leptosphaeralia trifolii*)
☐
BLACK PATCH (*Rhizoctonia leguminicola*)
☐

RED CLOVER VEIN MOSIAC VIRUS

☐

BEAN YELLOW MOSIAC VIRUS

☐

NEMATODE (Specify) _____

☐

OTHER (Specify) _____

B. INSECTS:

☐
CLOVER ROOT BORER (*Hylastinus obscurus*)
☐
CLOVER ROOT CURCULIO (*Sitona hispidula*)
☐
SWEETCLOVER WEEVIL (*Sitona cylindricollis*)
☐
CLOVER SEED CHALCID (*Bruchophagus platyptera*)
☐
LESSER CLOVER LEAF WEEVIL
(*Hypera nigrostris*)
☐
POTATO LEAFHOPPER (*Empoasca fabae*)
☐
YELLOW CLOVER APHID (*Therioaphis trifolii*)
☐
MEADOW SPITTLEBUG (*Philaenus spumarius*)
☐
CLOVER SEED MIDGE (*Dasineura leguminicola*)
☐
PEA APHID (*Acyrthosiphon pisum*)
☐
CLOVER LEAFHOPPER (*Aceratagallia sanguinolenta*)
☐

OTHER (Specify) _____

12. Indicate the variety most closely resembling the application variety for the following:

CHARACTER	VARIETY	CHARACTER	VARIETY
LEAFLET SHAPE	Arlington	SEED COLOR	KENSTAR
CUTTING RECOVERY	KENSTAR	LATE SEASON GROWTH	ARLINGTON
WINTER HARDINESS	ARLINGTON	PERSISTENCE	KENSTAR

REFERENCES:

Hawkins, R. P. 1953. Investigations on local strains of herbage plants II. Types of red clover and their identification. J. Brit. Grassland Soc. 8, 213-218.

Williams, R. D. 1927. Red clover investigations, 1919 - 1926. Welsh Plant Breeding Station Bull., Ser. H. No. 7.

COMMENTS: (If additional space is necessary, use reverse side)

RUBY RED CLOVER

EXHIBIT D

ADDITIONAL DESCRIPTION OF THE VARIETY

Ruby is a variety of two-cut, medium red clover. Ruby has shown superior forage yield to Lakeland and has yielded as well or better than Arlington. Also Ruby has more southern anthracnose resistance than Arlington. It is resistant to powdery mildew and has more resistance to northern anthracnose than Redland or Kenstar. It has good winter survival and persists in the field as well as Arlington. Because it has both southern and northern anthracnose resistance, Ruby has a much larger geographic adaptation than either Kenstar or Arlington.

RED CLOVER VARIETY TRIAL:

University of Wisconsin Trial

Arlington, Wisconsin

Planted: May 1975*

4 reps, 3 cuts

	1975 Powdery Mildew	1976 Yield tons/acre Dry matter	% Stand 4-26-76	% Stand 10-18-76	6-7-76 Anthracnose
Clovage	2.2	4.52	75	36	3.2
Ruby	2.0	4.82	89	74	2.8
Arlington	1.4	4.64	90	76	1.6
Lakeland	1.4	4.40	74	49	1.9
Kenstar	4.0	4.46	85	74	4.1
Redland	3.0	4.34	84	68	3.9
Pennscott	3.8	3.86	82	36	4.6
Redman	2.5	4.44	60	25	2.2
Dollard	1.5	4.26	82	49	1.5
PSC-1	4.2	4.14	72	38	1.2
Common	4.0	4.23	79	21	3.4
K4-184	1.8	4.09	81	75	3.6
HC 1	-	4.42	89	78	3.0
HC 4	-	4.61	85	86	1.2
HC 6	-	4.40	82	82	1.4
LSD (.05)	.5	.32	8	16	.4
MEAN	2.6	4.37	81	58	2.6
CV	12.0%	5.2%	6.6%	19.6%	11.5%

Design: Randomized complete block with four replications.

Plot Size: 5' x 25'. Seeding method: Broadcast.

Soil Type: Paar silt loam.

Disease ratings: Scale of 1 to 5. 1 - no disease; 5 = severe symptoms.

*No 1975 harvest data due to extremely dry weather. Powdery mildew data only.

RED CLOVER VARIETY TRIAL:

Dairyland Seed Co., Inc. - Clinton, Wisconsin

3 cuts/year - Seeded: April 1975

	1975 t/a D.M.	1976 t/a D.M.	'75-'76 t/a D.M.
Variety			
Clovage	2.39	3.88	3.14
Ruby	2.73	4.02	3.38
Arlington	2.59	3.88	3.24
Lakeland	2.53	3.81	3.17
EXP-MLM	1.75	3.84	2.79
LSD (.10)	.12	.20	.14
LSD (.05)	.16	.26	.19
MEAN	2.40	3.89	3.14

Design: Randomized complete block with four replications.

Plot Size: 5' x 25'. Seeding method: Broadcast.

Soil type: Miami silt loam.

TABLE 15. RED CLOVER VARIETY TRIAL, EXPERIMENT 338-046
 Agronomy South Farm, Urbana, Illinois
 1976 Yield Data - Seeded April 11, 1975

Variety	D.M. Yield				Total 1976	Average 2 Yr.
	5/26	7/7	8/4	9/8		
	T/A	T/A	T/A	T/A	T/A	T/A
Arlington	2.81	1.59	0.69	0.84	5.93	3.78
Clovage	2.40	1.39	0.59	0.77	5.16	3.51
Ruby*	2.77	1.66	0.77	0.96	6.16	3.95
Florie (K8-113)	2.62	1.63	0.70	1.12	6.07	4.03
Florex (K8-115)	2.78	1.59	0.63	0.75	5.75	3.63
Kenland	2.46	1.58	0.82	1.01	5.88	3.90
Kenstar	2.62	1.65	0.74	1.16	6.17	3.95
Lakeland	2.72	1.47	0.55	0.72	5.46	3.53
Redland	2.76	1.67	0.70	1.06	6.20	4.00
Redland	2.53	1.62	0.67	1.19	6.01	3.92
Redman	2.58	1.74	0.62	1.02	5.96	3.84
E-684	2.60	1.65	0.68	1.06	5.99	3.90
E-685	2.50	1.71	0.72	1.09	6.01	3.92
E-688	2.53	1.67	0.78	0.96	5.94	3.86
L.S.D. 5%	0.24	0.14	0.12	0.19	0.50	0.24
1%	0.32	0.18	0.17	0.26	0.66	0.32
C.V. %	6.48	5.94	12.64	13.83	5.90	4.38
Mean	2.62	1.62	0.69	0.98	5.92	3.84

Design: Randomized complete block with four replications.

Plot Size: 5' x 25'. Seeding method: Broadcast.

Soil type: Flanagan silt loam and Sidell silt loam.

Fertilization: 0-66-300 after first cutting.

*Ruby was originally listed as the experimental Joy.